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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WANG, TED M

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/843,161

Applicant(s)

SOMMER ET AL.

Examiner

Ted M. Wang

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 is/are allowed.
- 6) ☒ Claim(s) 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/06/2006 has been entered.

### ***Response to Arguments***

2. The indicated allowability of claims 13-16 are withdrawn in view of the references to US 5,095,528 and US 6,236,664. Rejections based on the cited references follow.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 13-15 are rejected under 35 U.S.C. 112, second paragraph, because the terms "Tdead", "Tup" and "Tdown", respectively, in the claims have not been properly defined.

- Claim 13, the limitation " wherein controlling said gain of said first variable gain amplifier includes changing said gain within a range defined by an upper limit and a lower limit if said downstream signal is not present, said gain control signal is below a low threshold, and a time interval Tdead has elapsed, where Tdead is a duration that persists with a same gain setting while said downstream signal is

not present and said control signal is below said low threshold" as recited is indefinite.

T<sub>dead</sub> is defined as a duration that persists with a same gain setting while said downstream signal is not present (condition 1) and said control signal is below said low threshold (condition 2). If both conditions are met and the same gain setting is persisting, how can T<sub>dead</sub> elapse and when is the gain changed within a range defined by an upper limit and a lower limit?

- Claim 14, the limitation " wherein controlling said gain of said first variable gain amplifier includes increasing said gain if said downstream signal is present, said gain control signal is below a low threshold, and a time interval T<sub>up</sub> has elapsed, where T<sub>up</sub> is a duration that persists while said downstream signal is present and said gain control signal is below said low threshold." as recited is indefinite.

T<sub>up</sub> is defined as a duration that persists while said downstream signal is present (condition 1) and said gain control signal is below said low threshold (condition 2). If both conditions are met and persisted, how can T<sub>up</sub> elapse and when is the gain increased?

- Claim 15, the limitation " wherein controlling said gain of said first variable gain amplifier includes decreasing said gain if said downstream signal is present, said gain control signal is above a high threshold, and a time interval T<sub>down</sub> has elapsed, where T<sub>down</sub> is a duration that persists while said downstream signal is present and said gain control signal is above said high threshold." as recited is indefinite.

Tdown is defined as a duration that persists while said downstream signal is present (condition 1) and said gain control signal is above said high threshold (condition 2). If both conditions are met and persisted, how can Tdown elapse and when is the gain decreased?

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leslie et al. (US 5,095,528) in view of anticipated by Erreygers (US 6,236,664).

As shown in figures 1-3, Leslie et al. discloses a method, comprising an extending loop (for example, figure 1) including:

□ With regarding claims 13, Leslie et al. discloses a method comprising:

producing an output signal in a first direction (via 16) from a first variable gain amplifier (16) at a mid-span extender unit (repeater, see column 1, lines 16-22) responsive to an input signal (output from 14);

monitoring (62 in figures 3a and 82 in figure 3b) a signal strength in the first direction at the of said output signal (see claim 1);

generating a gain control signal (output from 18) responsive to said signal strength (see claim 1 and column 3, lines 22-51);

controlling (35) a first gain of said first variable gain amplifier responsive to said gain control signal (see claim 1 and column 3, lines 22-51); and

controlling a second gain of a second variable gain amplifier (24) at said mid-span extender unit responsive to said gain control signal to produce an output signal in a second direction (via 24) from said second variable gain amplifier at said mid-span extender unit responsive to a second input signal in said second direction from said subscriber loop (see claim 1 and column 3, lines 22-51); and

detecting (18) whether a downstream signal is present on said subscriber loop (column 2, lines 65-column 3, line 2);

wherein controlling said gain of said first variable gain amplifier includes changing said gain within a range defined by an upper limit and a lower limit if said downstream signal is not present, said gain control signal is below a low threshold, and a time interval  $T_{dead}$  has elapsed (column 3 lines 22-28).

Leslie et al. all of the subject matter as described above except for specifically teaching of the mid-span extender unit within in a digital subscriber loop.

Erreygers teaches that the digital subscriber loop extender circuit (repeater) is interposed at an intermediate point of said asymmetric digital subscriber loop to extend said asymmetric digital subscriber loop (see figure 2).

It would be desirable to have amplifiers in the digital subscriber loop, which are provided for amplifying at least the intelligence carrying portion of the two direction signals so as to automatically reduce or increase the gain of the repeater (column 1, lines 37-54 and column 2, lines 1-14, Leslie et al.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the repeater of Leslie et al. to the digital subscriber loop of Erreygers in order to be able to automatically adjust the gain of the repeater. In so doing, the repeater is provided for amplifying at least the intelligence carrying portion of the two direction signals in the digital subscriber loop.

- With regarding claims 14, Leslie et al. further discloses wherein controlling said gain of said first variable gain amplifier includes increasing said gain if said downstream signal is present, said gain control signal is below a low threshold, and a time interval  $T_{up}$  has elapsed (column 3 lines 3-51).
- With regard claim 15, Leslie et al. further discloses wherein controlling said gain of said first variable gain amplifier includes decreasing said gain if said downstream signal is present, said gain control signal is above a high threshold, and a time interval  $T_{down}$  has elapsed (column 3 lines 3-51).
- With regard claim 16, Leslie et al. further discloses wherein controlling gain includes forcing a link termination (for example, cell site, it is inherent for the communication between mobile and cell size).

***Allowable Subject Matter***

7. Claim 12 is allowed.
8. The following is an examiner's statement of reasons for allowance.
  - The prior art fails to teach an apparatus of Claim 12 that specifically comprises the following:
    - The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. US 5,095,528, US 6,236,664 and US 6,583,899. The improvement comprises "wherein controlling said gain of said first variable gain amplifier includes determining when to change said gain based on at least one elapsed time interval selected from the group consisting of Tnormal, Tshutdown, Tsleep, and Tdead, where Tnormal is a duration that persists while i) said downstream signal is present, and said gain is between a lower threshold and an upper threshold, or ii) said downstream signal is present, an upstream power level is below a lower threshold, and said gain is at an upper limit, or iii) said downstream signal is present, said upstream power level is above an upper threshold, and said gain is at a lower limit, where Tshutdown is a maximum duration of link termination, where Tsleep is a subsequent duration, and where Tdead is a duration that persists with a same gain setting while said downstream signal is not present and a control signal is below a low threshold." as recited.



**Conclusion**

9. Reference US 6,583,899 and US 4,941,200 are cited because they are put pertinent to the AGC in a transmission system. However, none of references teach detailed connection as recited in claim.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang

  
**KEVIN BURD**  
**PRIMARY EXAMINER**